

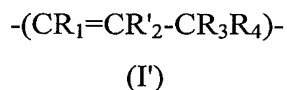
**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-17. (Cancelled)

18. (Previously presented) Process for preparing a polymer whose skeleton comprises a sequence of units of formula (I):



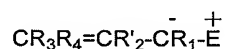
in which:

- R<sub>1</sub> represents a hydrogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- R'<sub>2</sub> represents a hydrogen or halogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- the radicals R<sub>3</sub> and R<sub>4</sub>, which may be identical or different, correspond to the same definition as R<sub>1</sub>, on condition that at least one of the radicals R<sub>3</sub> and R<sub>4</sub> represents, in each unit, a hydrogen atom;

the said radicals R<sub>1</sub>, R'<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> possibly comprising, when they represent a hydrocarbon-based group, one or more substituents chosen from halogen groups, alkyl groups of 1 to 20 carbon atoms, alkoxy groups of 1 to 20 carbon atoms, aryl groups of 6 to 20 carbon atoms, aryloxy groups of 6 to 20 carbon atoms and amino groups,

the said process comprising a step consisting in reacting, in suitable amount:

-at least one ylide compound corresponding to formula (2) below:



(2)

in which the radicals  $R_1$ ,  $R'_2$ ,  $R_3$  and  $R_4$  correspond to the same definition as that given above, E being a leaving group,

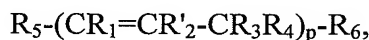
- with a trivalent boron compound, comprising at least one group capable of migrating, so as to obtain the said sequence of units of formula (I') as defined above.

19. (Original) Process according to Claim 18, in which the group capable of migrating is a group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, with the exception of branched alkyl groups linked to boron via a tertiary carbon.

20. (Previously Presented) Process according to Claim 18, in which the leaving group E is chosen from  $N_2$ ,  $S(R)_2$ ,  $S(O)(R)_2$ ,  $N(R)_3$ ,  $AsAr_3$  and  $PAR_3$ , in which Ar represents a phenyl group optionally substituted with methyl or methoxy groups and R is an alkyl group.

21. (Previously Presented) Process according to Claim 18, in which the ylide compound is methallyltriphenylarsonium ylide.

22. (Previously presented) Process for preparing a polymer corresponding to formula (II') below:



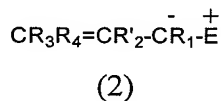
(II')

- wherein:
- $R_1$  represents a hydrogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- $R'_2$  represents a hydrogen or halogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;

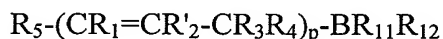
- the radicals  $R_3$  and  $R_4$ , which may be identical or different, correspond to the same definition as  $R_1$ , on condition that at least one of the radicals  $R_3$  and  $R_4$  represents, in each unit, a hydrogen atom;

the said radicals  $R_1$ ,  $R'_2$ ,  $R_3$  and  $R_4$  possibly comprising, when they represent a hydrocarbon-based group, one or more substituents chosen from halogen groups, alkyl groups of 1 to 20 carbon atoms, alkoxy groups of 1 to 20 carbon atoms, aryl groups of 6 to 20 carbon atoms, aryloxy groups of 6 to 20 carbon atoms and amino groups, and  $R_5$ ,  $R_6$  and  $p$  wherein  $R_5$  represents a linear or branched alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms or an aryl group containing from 6 to 20 carbon atoms,  $R_6$  represents an -OH, primary amine, thiol -SH, halogen or -CHO group, a group derived from -CHO, an ester group, an optionally substituted amide group or an azide group  $-N_3$ , and  $p$  is an integer ranging from 4 to 10 000, the said process comprising a step of reacting, in suitable amount:

- a boron compound of formula (1)  $R_5-BR_{11}R_{12}$  with  $R_5$  having the same definition as above and representing the group capable of migrating,  $R_{11}$  and  $R_{12}$ , which may be identical or different, possibly:
  - representing a branched alkyl group linked to the boron via a tertiary carbon containing from 4 to 20 carbon atoms, an alkoxy group containing from 1 to 20 carbon atoms or an aryloxy group containing from 1 to 20 carbon atoms; or
  - together forming a group  $-O-X-O-$ , in which  $X$  is a linear or branched alkylenediyl group containing from 2 to 6 carbon atoms
- with at least one allylic nucleophilic ylide compound of formula (2) as defined below,



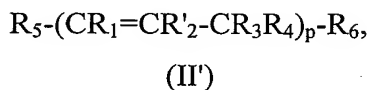
$E$  being a leaving group, by means of which an intermediate of formula (XII) below is obtained:



(XII)

the said process also comprising a step of converting the boron-based group into a suitable group  $R_6$ , by means of which the polymer of formula (II') defined above is obtained.

23. (Previously presented) Process for preparing a polymer corresponding to formula (II') below:

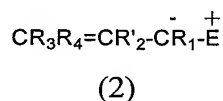


wherein:

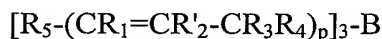
- $R_1$  represents a hydrogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- $R'_2$  represents a hydrogen or halogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- the radicals  $R_3$  and  $R_4$ , which may be identical or different, correspond to the same definition as  $R_1$ , on condition that at least one of the radicals  $R_3$  and  $R_4$  represents, in each unit, a hydrogen atom;

the said radicals  $R_1$ ,  $R'_2$ ,  $R_3$  and  $R_4$  possibly comprising, when they represent a hydrocarbon-based group, one or more substituents chosen from halogen groups, alkyl groups of 1 to 20 carbon atoms, alkoxy groups of 1 to 20 carbon atoms, aryl groups of 6 to 20 carbon atoms, aryloxy groups of 6 to 20 carbon atoms and amino groups, and  $R_5$ ,  $R_6$  and  $p$  wherein  $R_5$  represents a linear or branched alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms or an aryl group containing from 6 to 20 carbon atoms,  $R_6$  represents an - OH, primary amine, thiol -SH, halogen or -CHO group, a group derived from -CHO, an ester group, an optionally substituted amide group or an azide group -N<sub>3</sub>, and  $p$  is an integer ranging from 4 to 10 000, the said process comprising a step of reacting, in suitable amount, a boron compound of formula  $(R_5)_3-B$  with  $R_5$  having the same definition as that given above,

with at least one allylic nucleophilic ylide compound of formula (2) as defined below,



E being a leaving group, by means of which an intermediate of formula (XIII) below is obtained:

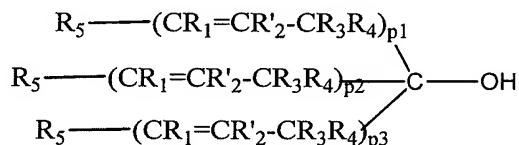


(XIII)

the said process also comprising a step of converting the boron-based group into a suitable group  $R_6$ , by means of which the polymer of formula (II') defined above is obtained.

24. (Previously presented) Process according to Claim 23, in which the boron compound has the formula  $Bu_3B$  and the nucleophilic ylide compound is methallyltriphenylarsonium, by means of which the polymer of Claim 7 is obtained after a final step of conversion by treatment with aqueous hydrogen peroxide solution in basic medium.

25. (Previously presented) Process for preparing the polymer corresponding to the following formula:

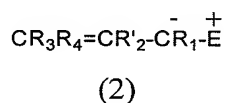


- the radicals  $R_5$ , which may be identical or different, wherein  $R_5$  represents a linear or branched alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms or an aryl group containing from 6 to 20 carbon atoms,  $R_1$ ,  $R'_2$ ,  $R_3$  and  $R_4$  being defined as follows:
- $R_1$  represents a hydrogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- $R'_2$  represents a hydrogen or halogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon

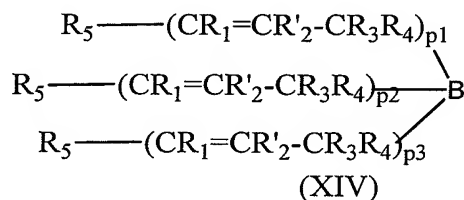
atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;

- the radicals  $R_3$  and  $R_4$ , which may be identical or different, correspond to the same definition as  $R_1$ , on condition that at least one of the radicals  $R_3$  and  $R_4$  represents, in each unit, a hydrogen atom;

the said radicals  $R_1$ ,  $R'_2$ ,  $R_3$  and  $R_4$  possibly comprising, when they represent a hydrocarbon-based group, one or more substituents chosen from halogen groups, alkyl groups of 1 to 20 carbon atoms, alkoxy groups of 1 to 20 carbon atoms, aryl groups of 6 to 20 carbon atoms, aryloxy groups of 6 to 20 carbon atoms and amino groups, and  $p_1$ ,  $p_2$  and  $p_3$ , which may be identical or different, being integers ranging from 2 to 5000, the said process comprising a step of reacting, in suitable amount, a boron compound of formula  $(R_5)_3-B$  with at least one allylic nucleophilic ylide compound of formula (2) as defined below,

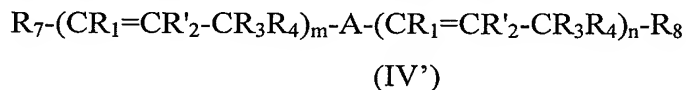


$E$  being a leaving group, by means of which an intermediate of formula (XIV) below is obtained:



the said process also comprising a step of converting the boron-based group into a C-OH group by treatment of the intermediate compound (XIV) by heating in the presence of carbon monoxide, followed by a treatment with aqueous hydrogen peroxide solution in basic medium.

26. (Previously presented) Process for preparing a polymer of formula (IV') below:



with  $R_1$ ,  $R'_2$ ,  $R_3$  and  $R_4$  defined as follows,

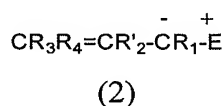
- $R_1$  represents a hydrogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups

containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;

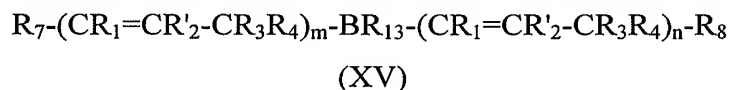
- R'<sub>2</sub> represents a hydrogen or halogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- the radicals R<sub>3</sub> and R<sub>4</sub>, which may be identical or different, correspond to the same definition as R<sub>1</sub>, on condition that at least one of the radicals R<sub>3</sub> and R<sub>4</sub> represents, in each unit, a hydrogen atom;

the said radicals R<sub>1</sub>, R'<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> possibly comprising, when they represent a hydrocarbon-based group, one or more substituents chosen from halogen groups, alkyl groups of 1 to 20 carbon atoms, alkoxy groups of 1 to 20 carbon atoms, aryl groups of 6 to 20 carbon atoms, aryloxy groups of 6 to 20 carbon atoms and amino groups, and

R<sub>7</sub>, R<sub>8</sub>, A, m and n wherein A represents a C=O group, a CO derivative or -CHOH group, and the radicals R<sub>7</sub> and R<sub>8</sub>, which may be identical or different, represent a linear or branched alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 3 to 20 carbon atoms or an aryl group containing from 6 to 20 carbon atoms, m is an integer ranging from 2 to 5000 and n is an integer ranging from 2 to 5000, the said process comprising the reaction of a boron compound of formula (6) R<sub>7</sub>-BR<sub>8</sub>R<sub>13</sub> with R<sub>7</sub> and R<sub>8</sub> having the same definition as that given above, R<sub>13</sub> being a branched alkyl group linked to the boron via a tertiary carbon containing from 4 to 20 carbon atoms, or an alkoxy or aryloxy group containing from 1 to 20 carbon atoms, with at least one allylic nucleophilic ylide compound of formula (2):

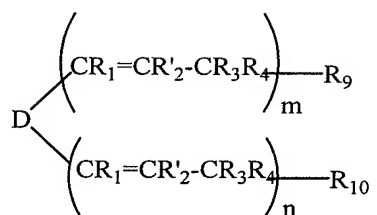


E being a leaving group, by means of which a derivative of formula (XV) is obtained:



followed by a reaction for conversion of the group BR<sub>13</sub> into a suitable group A.

27. (Previously presented) Process for preparing a polymer of formula (VII') below:



(VII')

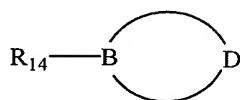
with the radicals R<sub>1</sub>, R'<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> defined as follows:

- R<sub>1</sub> represents a hydrogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- R'<sub>2</sub> represents a hydrogen or halogen atom or a hydrocarbon-based group chosen from linear or branched alkyl groups containing from 1 to 20 carbon atoms, cycloalkyl groups containing from 3 to 8 carbon atoms, alkoxy groups containing from 1 to 20 carbon atoms, aryl groups containing from 6 to 20 carbon atoms and aryloxy groups containing from 6 to 20 carbon atoms;
- the radicals R<sub>3</sub> and R<sub>4</sub>, which may be identical or different, correspond to the same definition as R<sub>1</sub>, on condition that at least one of the radicals R<sub>3</sub> and R<sub>4</sub> represents, in each unit, a hydrogen atom;

the said radicals R<sub>1</sub>, R'<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> possibly comprising, when they represent a hydrocarbon-based group, one or more substituents chosen from halogen groups, alkyl groups of 1 to 20 carbon atoms, alkoxy groups of 1 to 20 carbon atoms, aryl groups of 6 to 20 carbon atoms, aryloxy groups of 6 to 20 carbon atoms and amino groups,

R<sub>9</sub>, R<sub>10</sub>, D, m and n wherein the radicals R<sub>9</sub> and R<sub>10</sub>, which may be identical or different, represent an OH, NH<sub>2</sub>, SH, optionally substituted amide or -CHO group, a group derived from -CHO, an ester group, an optionally substituted amide group or an azide group -N<sub>3</sub>;  
 -or R<sub>9</sub> and R<sub>10</sub> together form a -C(=O)- group, a group derived from CO or a -CHOH- group;  
 - D represents a linear or branched alkylenediyl group containing from 4 to 20 carbon atoms, possibly comprising in its chain one or more heteroatoms chosen from oxygen, sulfur and nitrogen, m is an integer ranging from 2 to 5000 and n is an integer ranging from 2 to 5000, the said process comprising a step of reacting a cyclic boron compound of formula (7):

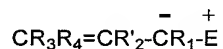




(7)

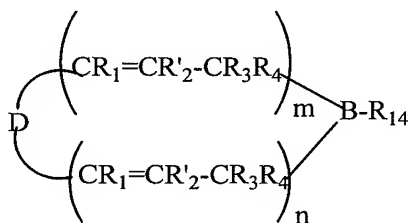
$\text{R}_{14}$  representing a group chosen from branched alkyl groups linked to boron via a tertiary carbon containing from 4 to 20 carbon atoms, or alkoxy or aryloxy groups containing from 1 to 20 carbon atoms,

with at least one nucleophilic ylide compound of formula (2):



(2)

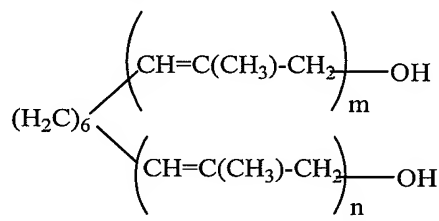
E being a leaving group, in order to obtain a derivative of formula (XVI):



(XVI)

followed by a step of conversion of the group  $\text{BR}_{14}$  into suitable groups  $\text{R}_9$  and  $\text{R}_{10}$ .

28. (Currently Amended) Process according to Claim 27, in which the cyclic boron compound is B-thexylborepane and the nucleophilic ylide compound is methallyltriphenylarsonium, by means of which ~~the a~~ polymer of formula (XI) of Claim 16 is obtained after a step of conversion via the action of aqueous hydrogen peroxide solution in basic medium, the polymer of formula (XI) being defined as:

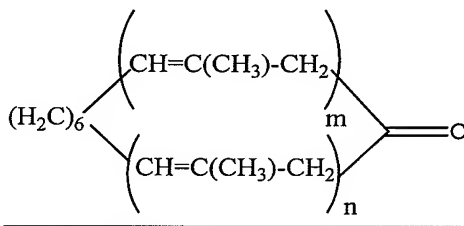


-(XI)-

wherein m is an integer ranging from 2 to 5000 and n is an integer ranging from 2 to 5000.

29. (Currently Amended) Process according to Claim 27, in which the cyclic boron compound is B-thexylborepane and the nucleophilic ylide compound is

methallyltriphenylarsonium, by means of which ~~the a~~ polymer of formula (IX) ~~of Claim 14~~ is obtained after a carbonylation step of conversion, the polymer of formula (IX) being defined as:



(IX).

wherein m is an integer ranging from 2 to 5000 and n is an integer ranging from 2 to 5000.-

30. (Cancelled)

31. (Previously Presented) Process according to Claim 19, in which the leaving group E is chosen from  $N_2$ ,  $S(R)_2$ ,  $S(O)(R)_2$ ,  $N(R)_3$ ,  $AsAr_3$  and  $PAR_3$ , in which Ar represents a phenyl group optionally substituted with methyl or methoxy groups and R is an alkyl group.